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File: USPT

Mar 9, 1999

DOCUMENT-IDENTIFIER: US 5879076 A  
TITLE: Method and appartus for light transmission

US PATENT NO. (1):  
5879076

Detailed Description Text (5):

The members 16 are of any suitable length depending on the degree of desired light transmission with the diodes 17 interposed therebetween and may be positioned either between the elongated strips 12, 13 of material by locating the members, diodes and conductive fabric between the strips with the strips sewn together at their outer edges 22; the plastic material, conductive fabric and diodes being fed into an extruder and extruded with the thermoplastic material formed into a desirable cross sectional profile and the diodes and conductive means imbedded in the plastic which acts as an electrical insulator for the conductive fabric and diodes; or the fabric and diodes may be placed in a suitable mold and the hot-melt adhesive thermoplastic material injection or transfer molded around the light conductive apparatus and quickly cooled to provide the greatest degree of transparency.

Detailed Description Text (15):

The ethylene-vinyl acetate thermoplastic material is highly flexible and is both formable and reformable into any shape or cross section without affecting the light transmission properties of the material; members also may be joined at their ends with only minimal loss of light transmission therethrough. Light can be transmitted through the material at any angle, not only from the ends of the members. Thus, light may be projected at the members perpendicular to the axis thereof or at any other angle to such axis and the light will be transmitted through the material. Available as substitutes for the ethylene-vinyl acetate plastic are low-density polyethylene, polypropylene, a copolyester plastic identified as "Spectar" manufactured by Eastman Chemical Company and a polyamide thermoplastic manufactured by Hysol Engineering Adhesives identified as #7820 Hysol or combinations thereof; although these materials may or may not be as highly flexible as the ethylene-vinyl acetate plastic. For example, the "Spectar" material is a relatively hard plastic with high optical clarity but more rigid than ethylene-vinyl acetate thermoplastic. The light conductive material emits light in all directions from all planes, internal and external when driven by a light-emitting source. Also, where the device may be used in a flammable situation, the thermoplastic hot-melt adhesives may be treated with a suitable flame retardant to prevent fires or explosions.

Detailed Description Text (17):

The light output strength can be increased by selectively scoring the external planes of the light conductive material or in addition can be increased by selectively backing planes of the light conductive material with a suitable reflective material. Dyes or colorants can be added to the light conductive medium to vary the effect created thereby. Also, the visible light output of red, green and blue light-emitting diodes can be combined with the members in the belt or vest, etc. in which the light passes through the core or along the surface of the light conductive medium to achieve an array of a sixty-four color spectrum. Also the light conductive members or strands may be layered, bundled or weaved in several combinations to achieve desired light output characteristics.